



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/549,387	06/29/2006	Brian Gordon Stewart	031749/297914	1924
836 7590 06/22/2010 ALSTON & BIRD LLP BANK OF AMERICA PLAZA 101 SOUTH TRYON STREET, SUITE 4000 CHARLOTTE, NC 28280-4000			EXAMINER PATEL, DHAVAL V	
			ART UNIT 2611	PAPER NUMBER
			MAIL DATE 06/22/2010	DELIVERY MODE PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/549,387

Applicant(s)

STEWART, BRIAN GORDON

Examiner

DHAVAL PATEL

Art Unit

2611

Period for Reply -- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 09 March 2010.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 58-74 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 58-61, 63, 64, 69-74 is/are rejected.
- 7) ☒ Claim(s) 62 and 65-68 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 09 March 2010 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB-08)
- 4) ☐ Interview Summary (PTO-413)
- 5) ☐ Paper No(s)/Mail Date _____
- 6) ☐ Other: _____

DETAILED ACTION

Response to Arguments

1. The objection to the specification has been withdrawn.
2. The objection to drawings has been withdrawn.
3. The rejection with respect to 35 USC 112, 1st has been withdrawn.
4. Applicant's arguments with respect to claims have been considered but are moot in view of the new ground(s) of rejection because of newly found reference.

Claim Rejections - 35 USC § 101

5. 35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

Regarding claim 74, the claimed invention is directed to non-statutory subject matter. Claim recites "a computer readable medium" however; computer readable medium is broadly interpreted to one of ordinary skilled in the art as a "signal" per se. and "signal" is a non-statutory subject matter. However, applicant is suggested to change it to "A non-transitory computer readable medium".

Claim Rejections - 35 USC § 102

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

7. Claims 58-61 and 73 are rejected under 35 U.S.C. 102(e) as being anticipated by Ma et al. (US 7,248,559) (hereafter Ma).

Regarding claim 58, Ma discloses a method for encoding data for transmission over a telecommunications network comprising embedding a control data block within a plurality of real data blocks (Fig. 2, coding, modulation, 12, pilot insertion block, 24 which inserts the pilots in the data signal, here, mapping of the data would generate the I and Q data since mapping is done in I-Q form); convoluting real data in each real data block with at least some of the control data in the control data blocks (Fig. 2, since pilot insertion in which the upper branch (16) generates the pilot insertion in the upper and lower branch since, pilot is inserted into data, data and pilots are added to each other which is construed as convolution); modulating or transforming the convoluted real data in the real data blocks with one or more sub-carrier signals; and modulating or transforming data in the control data block with every sub-carrier that is used to modulate the real data (Fig. 2, IFFT (26) which generates the transformation of pilot insertion data (24) which is convolved data for modulation, since, data and pilot are added together, both will be processed for IFFT modulation).

Regarding claim 59, Ma further discloses a method, wherein each of the control and real data blocks has m entries (Fig. 2, data generated from branch which is S/P

converted and pilot block (230 has multiple symbols) such as P1 and P2), where m is an integer of one or more, and m sub-carrier transmission channels are provided (Fig. 2, IFFT, which is sub carriers), and each control data entry and each real data entry are modulated with the corresponding sub-carrier (Fig. 2, modulation, 12 which generates I and Q data, and mapping on IFFT, since both pilot and data are combined, the IFFT modulation performed on both).

Regarding claim 60, Ma further discloses a method, wherein the step of convoluting involves phase angle convoluting each entry in each real data block with a phase angle of the corresponding entry in the control block (Fig. 2, convoluting here is phase addition of pilot and data symbols).

Regarding claim 61, Ma further discloses a method, wherein the step of phase angle convoluting involves adding the phase angle of each entry of the control data block to the phase angle of the corresponding entry of each real data block (Fig. 2, convoluting here is phase addition of pilot and data symbols).

Regarding claim 73, Ma further discloses a system for encoding data for transmission over a telecommunications network according to the method of claim 58, the system preferably being a personal mobile communications device or mobile/radio telephone or a computer with telecommunications capabilities or a digital broadcast radio or a digital television or set top box or any wireless networked device (col. 1 lines

19-23, OFDM high speed radio transmission, Fig. 6, wireless communications)

Claim Rejections - 35 USC § 103

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in Graham v. John Deere Co., 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows: (*See MPEP Ch. 2141*)

- a. Determining the scope and contents of the prior art;
- b. Ascertaining the differences between the prior art and the claims in issue;
- c. Resolving the level of ordinary skill in the pertinent art; and
- d. Evaluating evidence of secondary considerations for indicating obviousness or nonobviousness.

9. **Claims 63, 64, 69, 70 are rejected under 35 U.S.C. 102(a) as being anticipated by Ma in view of Schafer et al. (WO 93/09622)(hereafter Schafer).**

Regarding claim 63, Ma does not explicitly disclose a method wherein each phase angle for control data is randomly assigned. However, in the same field of endeavor, Schafer teaches method, wherein each phase angle for the control data in the control data block is randomly assigned (col. 5 lines 20-26 discloses pilot phases are randomly chosen). Therefore, it would have been obvious to one of ordinary skilled in the art to generate the pilot with the randomized method of Schafer, to generate the orthogonal control blocks, as well known in the art.

Regarding claim 64, the combined teachings of Ma and Schefer further teaches a method, wherein each entry of the control data block has a phase angle that is a function of the phase angles of the corresponding entries of the real data blocks (col. 4 lines 10-15 discloses phase of the pilot sub carriers depends only on the sub carrier index $p(l, k)$, if an additional phase rotation is a function of the sub carrier index and OFDM symbol, so, here, convolution is there since, there is a phase relationship between each symbol and phase of the pilot sub carrier),

Regarding claim 69, the combined teachings of Ma and Schefer further teaches a method as claimed in claim 58, wherein the step of modulating comprises frequency modulating the signal (col. 1 lines 15-20, OFDM modulation)

Regarding claim 70, the combined teachings of Ma and Schefer further teaches a method as claimed in claim 58, comprising receiving data for transmission to a receiver, dividing the data into $N-1$ data blocks and embedding a the control data block into the $N-1$ data blocks to provide a N block data transmission (col. 5 lines 10-20, pilot arrangement within the data with different pilot phase profile, and pilot phase is dependent upon the OFDM symbol, col. 5 lines 20-26 discloses randomizing the pilots phases).

10. Claims 71 and 72 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ma and Schefer, as applied to claim 58 above, and further in view of Jasper et al. (WO 93/09622) (hereafter Jasper).

Regarding claim 71, Ma and schefer do not explicitly disclose a method wherein the control data block is embedded substantially in the middle of the real data blocks. However, in the same field of endeavor, jasper teaches communication signal having a time domain pilot component in which page 10, lines 20-30 describes various pilot arrangements within information symbol. Fig. 1 describes pilot insertion process (108...110) and Fig. 4a-4d describes various pilot arrangement for sub channels 1-4 in which pilots symbols are embedded in substantially middle of the information system, therefore, it would have been obvious to one of ordinary skilled in the art at the time of the invention to combine the teachings of Jasper, into the system of Ma and Schefer, as a whole, so as to insert pilots in middle in random arrangement of pilots, the motivation is to provide robust technique in a varying multipath environment (page 4, lines 15-20).

Regarding claim 72, Ma and Schefer do not explicitly disclose wherein the plurality of control data blocks are embedded within the real data blocks. However, in the same field of endeavor, Jasper, teaches communication signal having a time domain pilot component in which Figs. 4a-4g teaches various pilot arrangements within information symbol, in which Fig. 4g describes having multiple pilot symbols are embedded within the information symbol, for example, in Fig. 4g, the two pilot symbols are inserted between the data symbols, therefore, it would have been obvious to one of

ordinary skilled in the art at the time of the invention to combine the teachings of Jasper, into the system of Schefer, as a whole, so as to incorporate multiple pilots within the information symbol, the motivation is to provide robust technique in a varying multipath environment (page 4, lines 15-20).

11. Claim 74 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ma in view of Langberg et al. (US 5,852,850) (hereafter Langberg).

Regarding claim 74, Claim discloses all the subject matter as described in claim 58, except for the method written by a computer code embodied in a computer readable-medium and having code or instructions for carrying out the method.

However, Landberg teaches that the method and apparatus for a transceiver warm start activation procedure with precoding can be implemented in software stored in a computer-readable medium and that configures and drives any suitable digital signal processor situated in communication device. The computer readable medium is an electronic, magnetic, optical or physical device or means that can be contain or store a computer program for use by or in connection with a computer related system or method (col. 1 lines 51-65). One skilled in the art would have clearly recognized that the method of Ma would have been implemented in software, The implemented software would perform same function of the hardware for less expense, adaptability and flexibility, therefore, it would have been obvious to one ordinary skilled in the art at the time of the invention was made to us the software as taught by Landberg in the Ma, in

order to reduce cost and improve adaptability and flexibility of the communication system.

Allowable Subject Matter

12. Claims 62 and 65-68 objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Patel Dhaval whose telephone number is (571) 270-1818. The examiner can normally be reached on M-F 8:30-6:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Shuwang Liu can be reached on (571) 272-3036. Customer Service can be reached at (571) 272-2600. The fax number for the organization where this application or proceeding is assigned is (571) 273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Application/Control Number: 10/549,387
Art Unit: 2611

Page 10

/Dhaval Patel/

Examiner, Art Unit 2611

6/18/2010

/Shuwang Liu/

Supervisory Patent Examiner, Art Unit 2611